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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,708	12/08/2003	Alex Nugent	1000-1214	3983

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EXAMINER	
VINCENT, DAVID ROBERT	
ART UNIT	**PAPER NUMBER**
2129	

DATE MAILED: 01/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/730,708	NUGENT, ALEX
	Examiner	Art Unit
	Peter Coughlan	2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/30/04 & 10/12/05*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Detailed Action

1. Claims 1-22 are pending in this application.

Claim objections

2. Claim 4 is missing from the list of claims. This objection must be corrected.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bezryadin in view of Mehrotra, and further in view of Middleton, and further in view of Tapang ('Self-assembled chains of graphitized carbon nanoparticles':

referred to as **Bezryadin**; 'Elements of Artificial Neural networks', referred to as **Mehrotra;** 'Collective Transport in Arrays of Small Metallic Dots', referred to as **Middleton**; U. S. Patent 4926064, referred to as **Tapang**).

Claim 1.

Bezryadin teaches providing a physical neural network comprising at least one neuron and at least one synapse thereof, wherein said at least one synapse is formed from a plurality of nanoparticles disposed within a dielectric solution in association with at least one pre-synaptic electrode and at least one post-synaptic electrode thereof and an electric field applied thereof (**Bezryadin**, page 2:12-14); and transmitting at least one pulse generated from said at least one neuron to at least one post-synaptic electrode of a said neuron and said at least one pre-synaptic electrode of said at least one neuron of said physical neural network, thereby strengthening at least one nanoconnection of said plurality of nanoparticles disposed within said dielectric solution and said at least one synapse thereof (**Bezryadin**, page 2:14-19; Examiner's Note (NE) 'Synapse' of applicant is equivalent to 'transport properties' of Bezryadin.).

Claim 2.

Bezryadin teaches increasing an electrical frequency of said electric field applied to said at least one pre-synaptic electrode and said at least one post-synaptic electrode, in response to generating said at least one pulse said at least one neuron, thereby strengthening at least one nanoconnection of said plurality of nanoparticles disposed

within said dielectric solution and said at least one synapse thereof (**Bezryadin**, page 3:7-9).

Claim 3.

Bezryadin teaches forming a connection network from said plurality of nanoparticles by applying said electric field to said at least one pre-synaptic electrode and said at least one post-synaptic electrode associated with said plurality of nanoparticles (**Bezryadin**, Page 2:4-10; EN 'Connection network' of applicant is equivalent to '1D arrays' of Bezryadin.).

Claims 5, 8 and 22.

Bezryadin does not teach physical neural network comprises an adaptive neural network. Mehrotra teaches physical neural network comprises an adaptive neural network (**Mehrotra**, pages 116-135). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify teachings of Bezryadin by illustrating in some detail the contents of an adaptive neural network is a subclass of neural networks as taught by Bezryadin to teach physical neural network comprises an adaptive neural network.

The purpose being the adaptive neural network can be pruned to handle the task at hand.

Claim 6.

Bezryadin teaches providing a physical neural network comprising a plurality of neurons formed from a plurality of nanoconnections disposed within a dielectric solution in association with at least one pre-synaptic electrode and at least one post-synaptic electrode (**Bezryadin** page2:7-14); activating said subsequent neuron in response to firing an initial neuron of said plurality of neurons, thereby increasing a voltage of a pre-synaptic electrode of said neuron, which causes a refractory pulse thereof to decrease a voltage of a post-synaptic electrode associated with said neuron and thus provides an increased voltage between said pre-synaptic electrode of said preceding neurons and said post-synaptic electrode of said neuron (**Bezryadin** page2:14-19).

Claim 7.

Bezryadin and Mehrotra do not teach firing and activating subsequent neurons thereof in succession in order to produce an increased frequency of an electric field between subsequent pre-synaptic and post-synaptic electrodes thereof, thereby causing an increase in an alignment of at least one nanoconnection of said plurality of nanoconnections and a decrease in an electrode resistance between said subsequent pre-synaptic and post-synaptic electrodes thereof. Middleton teaches firing and activating subsequent neurons thereof in succession in order to produce an increased frequency of an electric field between subsequent pre-synaptic and post-synaptic electrodes thereof, thereby causing an increase in an alignment of at least one nanoconnection of said plurality of nanoconnections and a decrease in an electrode resistance between said subsequent pre-synaptic and post-synaptic electrodes thereof

(**Middleton**, p3198, C1:21-25; EN 'Decrease in an electrode resistance' of applicant is equivalent to 'increase in conductivity' of Middleton.).It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra by an increase in the electrical field (increased frequency) improves the conductivity state of the nanoparticles as taught by Middleton to have firing and activating subsequent neurons thereof in succession in order to produce an increased frequency of an electric field between subsequent pre-synaptic and post-synaptic electrodes thereof, thereby causing an increase in an alignment of at least one nanoconnection of said plurality of nanoconnections and a decrease in an electrode resistance between said subsequent pre-synaptic and post-synaptic electrodes thereof.

The purpose being is to have the ability of changing the output based on the connectivity of the nanoparticles.

Claim 9.

Bezryadin teaches configuring an adaptive physical neural network to comprise a plurality of nanoparticles located within a dielectric solution, wherein said plurality of nanoparticles experiences an alignment with respect to an applied electric field to form a connection network thereof, such that said adaptive physical neural network comprises a plurality of neurons interconnected by a plurality of said nanoconnections (**Bezryadin**, page 2:7-17; EN 'Physical neural network' of applicant is equivalent to '1D arrays' of Bezryadin.)

Bezryadin and Mehrotra do not teach providing an increased frequency of said applied electric field to strengthen said plurality of nanoparticles within said adaptive physical neural network regardless of a network topology thereof. Middleton teaches providing an increased frequency of said applied electric field to strengthen said plurality of nanoparticles within said adaptive physical neural network regardless of a network topology thereof (**Middleton**, p3198, C1:21-25). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra an increase in the electrical field (increased frequency) improves the conductivity state of the nanoparticles as taught by Middleton to providing an increased frequency of said applied electric field to strengthen said plurality of nanoparticles within said adaptive physical neural network regardless of a network topology thereof.

The purpose being is to have the ability of changing the output based on the connectivity of the nanoparticles.

Claim 10.

Bezryadin does not teach providing at least one output from at least one neuron of said plurality of neurons to an input of another neuron of said adaptive physical neural network. Mehrotra teaches providing at least one output from at least one neuron of said plurality of neurons to an input of another neuron of said adaptive physical neural network (**Mehrotra**, p122:fig 4.9(a); EN There are 3 input nodes for a single output node.). It would have been obvious to a person having ordinary skill in the

art at the time of applicant's invention to modify teachings of Bezryadin by illustrating a basic design of a neural network of a adaptive design as taught by Mehrotra to have at least one output from at least one neuron of said plurality of neurons to an input of another neuron of said adaptive physical neural network.

The purpose being is to have the ability of changing the design of the neural network based on the given input or situation.

Claim 11.

Bezryadin, Mehrotra and Middleton do not teach automatically summing at least one signal provided by said connection network via at least one neuron of said adaptive physical neural network to provide a summation value thereof; comparing said summation value to a threshold value and emitting a pulse if a current activation state exceeds said threshold value; and automatically grounding or lowering to -Vcc a post synaptic junction associated with said at least one neuron during emission of said pulse, thereby causing at least one synapse in receipt of a pre-synaptic activation to experience an increase in a local electric field, such that at least one synapse that contributes to an activation of said at least one neuron experiences an increase in said local electric field parallel to a connection direction associated with said connection network and additionally experiences a higher frequency of activation in order to increase a strength of said nanoconnections.

Tapang teaches automatically summing at least one signal provided by said connection network via at least one neuron of said adaptive physical neural network to

provide a summation value thereof (**Tapang**, C8:58 through C9:2); comparing said summation value to a threshold value and emitting a pulse if a current activation state exceeds said threshold value (**Tapang**, C10:17-45); and automatically grounding or lowering to -Vcc a post synaptic junction associated with said at least one neuron during emission of said pulse, thereby causing at least one synapse in receipt of a pre-synaptic activation to experience an increase in a local electric field, such that at least one synapse that contributes to an activation of said at least one neuron experiences an increase in said local electric field parallel to a connection direction associated with said connection network and additionally experiences a higher frequency of activation in order to increase a strength of said nanoconnections (**Tapang**, C10:17-45; EN 'Grounding' of applicant is equivalent to 'pull down toward ground the voltage at its output point' of Tapang.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin, Mehrotra and Middleton by illustrating the physics and design of the summation value with a comparator of the neural network as taught by Tapang to automatically summing at least one signal provided by said connection network via at least one neuron of said adaptive physical neural network to provide a summation value thereof; comparing said summation value to a threshold value and emitting a pulse if a current activation state exceeds said threshold value; and automatically grounding or lowering to -Vcc a post synaptic junction associated with said at least one neuron during emission of said pulse, thereby causing at least one synapse in receipt of a pre-synaptic activation to experience an increase in a local electric field, such that at least one synapse that

contributes to an activation of said at least one neuron experiences an increase in said local electric field parallel to a connection direction associated with said connection network and additionally experiences a higher frequency of activation in order to increase a strength of said nanoconnections.

For the purpose of describing in detail when the total sum of inputs are put into a comparator, and if a amount is higher than the voltage node the pulse is discharged.

Claim 12.

The combination of Bezryadin, Mehrotra and Middleton do not teach at least one neuron of said physical neural network comprises an integrator. Tapang teaches at least one neuron of said physical neural network comprises an integrator (**Tapang**, C8:39-57). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin, Mehrotra and Middleton by having a device which fires a response within certain parameters as taught by Tapang to have at least one neuron of said physical neural network comprises an integrator.

For the purpose of having the neuron fire under a pre-synaptic condition of when neuron's excitation level is greater then the neuron's threshold value.

Claim 13.

Bezryadin teaches providing a physical neural network comprising a plurality of neurons connected via a plurality of nanoconductors disposed within a dielectric

solution to form at least one connection network of nanoconnections thereof, wherein said nanoconnections transfer signals (**Bezryadin**, page 2:7-19; EN 'Neural network' of applicant is equivalent to 'arrays' of Bezryadin.);

Bezryadin does not teach presenting an input data set to said physical neural network to produce at least one output thereof; and increasing network activity within said physical neural network until said at least one output changes to a desired output. Mehrotra teaches presenting an input data set to said physical neural network to produce at least one output thereof; and increasing network activity within said physical neural network until said at least one output changes to a desired output (**Mehrotra**, p122:fig 4.9(a); EN There are 3 input nodes for a single output node.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify teachings of Bezryadin by illustrating the basic design of a neural network as taught by Mehrotra to present an input data set to said physical neural network to produce at least one output thereof; and increasing network activity within said physical neural network until said at least one output changes to a desired output.

The purpose being to take advantage of the strengths of a neural network design.

Claim 14.

The combination of Bezryadin and Mehrotra do not teach the step of increasing said network activity within said physical neural network, further comprises the step of: increasing a number of firing neurons in said physical neural network. Middleton

teaches the step of increasing said network activity within said physical neural network, further comprises the step of: increasing a number of firing neurons in said physical neural network (**Middleton**, page 3198, C1:21-25; EN 'Increasing said network activity' of applicant is equivalent to 'increasing electrical field' of Middleton.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra by demonstrating how an increase in electrical fields, increases conductivity (network activity) as taught by Middleton to have the step of increasing said network activity within said physical neural network, further comprises the step of: increasing a number of firing neurons in said physical neural network.

For the purpose of easily increasing conductivity for future use in the designs of a neural network.

Claim 15.

The combination of Bezryadin and Mehrotra do not teach said plurality of neurons comprises a plurality of interconnected neurons that are interconnected by said nanoconnections, each of said nanoconnections being associated with a weight; and said increasing said network activity within said physical neural network includes scaling a weight associated with said nanoconnections by a positive factor. Middleton teaches said plurality of neurons comprises a plurality of interconnected neurons that are interconnected by said nanoconnections, each of said nanoconnections being associated with a weight (**Middleton**, page 3199, C1:6-10; EN 'Weight' of applicant is

equivalent to 'voltage' by Middleton.); and said increasing said network activity within said physical neural network includes scaling a weight associated with said nanoconnections by a positive factor (**Middleton**, page 3198, C1:21-25). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra by using voltage instead of a numerical value for weight as taught by MIddleton to have said plurality of neurons comprises a plurality of interconnected neurons that are interconnected by said nanoconnections, each of said nanoconnections being associated with a weight; and said increasing said network activity within said physical neural network includes scaling a weight associated with said nanoconnections by a positive factor.

Since the nanoparticles and nanoconnections are the basis of the invention and voltage conductivity can be altered by the amount of electricity which passes through, having voltage as a form of weight falls fits into the basic properties of the invention.

Claim 16.

The combination of Bezryadin and Mehrotra do not teach said plurality of neurons comprises a plurality of interconnected neurons that are interconnected by nanconnections for transferring signals having a magnitude in a firing state; and said increasing said network activity within said physical neural network includes increasing said magnitude of said signal in said firing state. Middleton teaches said plurality of neurons comprises a plurality of interconnected neurons that are interconnected by nanconnections for transferring signals having a magnitude in a firing state; and said

increasing said network activity within said physical neural network includes increasing said magnitude of said signal in said firing state (**Middleton**, page3198, C1:13-34 and page 3199, C1:6-10; EN 'Nanoconnections' of applicant is achieved by 'small metallic dots' of Middleton. 'Increase of network activity' of applicant equivalent to 'increase in conductivity' by Middleton.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra by going into some detail about the physics of the system of small metallic parts as taught by MIddleton to have a plurality of neurons comprises a plurality of interconnected neurons that are interconnected by nanoconnections for transferring signals having a magnitude in a firing state; and said increasing said network activity within said physical neural network includes increasing said magnitude of said signal in said firing state.

For the purpose of having a working physical model wherein it's properties can be made to construct a neural network.

Claim 17.

The combination of Bezryadin and Mehrotra do not teach said plurality of neurons comprises a plurality of interconnected neurons that are interconnected by a plurality of data input neurons thereof adapted to receive respective external signals; said increasing said network activity within said physical neural network includes increasing a magnitude of said respective external signals. Middleton teaches said plurality of neurons comprises a plurality of interconnected neurons that are

interconnected by a plurality of data input neurons thereof adapted to receive respective external signals; said increasing said network activity within said physical neural network includes increasing a magnitude of said respective external signals (**Middleton**, page 3198, C1:13-34 and C2:22-24 and page 3199, C1:6-10). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra by illustrating the fact the system has access to external signals as taught by Middleton to have a plurality of neurons comprises a plurality of interconnected neurons that are interconnected by a plurality of data input neurons thereof adapted to receive respective external signals; said increasing said network activity within said physical neural network includes increasing a magnitude of said respective external signals.

The purpose of having external inputs is so that a user can take advantage of such an invention.

Claim 18.

The combination of Bezryadin, Mehrotra and Middleton do not teach said plurality of neurons comprises a plurality of interconnected neurons, each of said interconnected neurons being configured to fire when a corresponding excitation level thereof is greater than or equal to a threshold; and said increasing said network activity within said physical neural network includes lowering said threshold. Tapang teaches said plurality of neurons comprises a plurality of interconnected neurons, each of said interconnected neurons being configured to fire when a corresponding excitation level thereof is greater

than or equal to a threshold; and said increasing said network activity within said physical neural network includes lowering said threshold (**Tapang**, C10:17-45 and C11:11-37; EN Tapang illustrates the mechanics of what happens in regards to the threshold limit and increased voltages leading to the firing of the neuron. If all parameters were to remain constant with the exception of the threshold being lowered, then it is easy to see the neuron would fire earlier. Resulting in the network activity increasing.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin, Mehrotra and Middleton by explaining if the threshold was lowered, then network activity would be increased as taught by Tapang to have said plurality of neurons comprises a plurality of interconnected neurons, each of said interconnected neurons being configured to fire when a corresponding excitation level thereof is greater than or equal to a threshold; and said increasing said network activity within said physical neural network includes lowering said threshold.

The purpose of having the ability to adjust the threshold is critical in the development of the neural network.

Claim 19.

The combination of Bezryadin and Mehrotra do not teach determining said excitation level of at least one neuron of said plurality of neurons based on a weighted sum of input signals received over respective nanoconnections, said nanoconnections being associated with respective weights. Middleton teaches determining said

excitation level of at least one neuron of said plurality of neurons based on a weighted sum of input signals received over respective nanoconnections, said nanoconnections being associated with respective weights (**Middleton**, page 3199, C1:6-10). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra by summing the charges is equivalent to determining the excitation level as taught by Middleton to determining said excitation level of at least one neuron of said plurality of neurons based on a weighted sum of input signals received over respective nanoconnections, said nanoconnections being associated with respective weights.

For the purpose of determining a excitation level is needed as input for a threshold comparison.

The combination of Bezryadin, Mehrotra and Middleton do not teach adjusting each of said weights when said at least one neuron of said plurality of neurons and a corresponding one of said others of said neurons fire within a prescribed time interval. Tapang teaches adjusting each of said weights when said at least one neuron of said plurality of neurons and a corresponding one of said others of said neurons fire within a prescribed time interval (**Tapang**, C10:38-45; EN 'Adjusting the weight' of applicant is equivalent to 'current charging the capacitor' of Tapang. Since 'weight' is voltage in this invention, by changing the 'weight' one changes the voltage and thus the speed which the capacitor is charged.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin, Mehrotra and Middleton by illustrating the fact if the weight is adjusted this effects the

firing of the neuron as taught by Tapang to adjusting each of said weights when said at least one neuron of said plurality of neurons and a corresponding one of said others of said neurons fire within a prescribed time interval.

For the purpose of making sure the neurons do fire and thus be able to handle real world problems and not hang up waiting for neuron's to fire.

Claim 20.

The combination of Bezryadin and Mehrotra do not teach increasing said network activity within said physical neural network in response to a signal. Middleton teaches increasing said network activity within said physical neural network in response to a signal (**Middleton**, page3198, C1:21-25 and page 3199, C1:40-42; EN 'Physical neural network' of applicant is equivalent to 'two-dimensional arrays' of Middleton.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify combined teachings of Bezryadin and Mehrotra by incorporating a dynamic network into a physical neural network as taught by Middleton for increasing said network activity within said physical neural network in response to a signal.

For the purpose of having a real world neural network that uses nanoparticles and nanoconnections.

Claim 21.

Bezryadin does not teach providing said desired output data; and comparing said desired output data and said output to generate said signal in response if said desired

output data is not equal to said output. Mehrotra teaches providing said desired output data (**Mehrotra**, p117:3-4; EN 'Desired' is a level of tolerance which is set at an acceptable level.); and comparing said desired output data and said output to generate said signal in response if said desired output data is not equal to said output (**Mehrotra**, p117:2-7; EN Here Mehrotra illustrates a loop where output data is compared to the desired output data.). It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify teachings of Nugent by having the neural network be an adaptive neural network as taught by Mehrotra to have desired output data; and comparing said desired output data and said output to generate said signal in response if said desired output data is not equal to said output.

For the purpose of having a network that isn't too large and inefficient to handle a specific task.

Conclusion

4. The prior art of record and not relied upon is considered pertinent to the applicant's disclosure.

-U. S. Patent Publication 20050041458: Lossau

5. Claims 1-22 are rejected.

Correspondence Information

6. Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner Peter Coughlan, whose telephone number is (571) 272-5990. The Examiner can be reached on Monday through Friday from 7:15 a.m. to 3:45 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor David Vincent can be reached at (571) 272-3687. Any response to this office action should be mailed to:

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Peter Coughlan

12/14/2005